Russian River Watershed Protection Committee:

Comments on Draft Staff Report of North Coast Regional Board to establish exception criteria to the point source waste discharge prohibitions by revising the action plan for storm water discharges and adding a new action plan for low threat discharges

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In general RRWPC supports the fine work of the North Coast Regional Board. We count on your agency to support water quality in the North Coast Region and the Russian River in particular and over the years we have watched the Agency become much more effective in that role. We have found staff to be knowledgeable, friendly, and devoted to the cause of clean water. Also, we understand the pressures and circumstances under which Regional Board staff conducts this difficult work. While we have serious reservations about part of this Amendment, we have the highest respect for your role and hope you will have similar regard for ours by addressing our concerns.

Citizen-friendly language and clarity of purpose needed…..

The title of this proposed amendment is so complex that any ordinary citizen would have a hard time understanding what it means. Furthermore, if the title is to remain so lengthy, we believe it should include the term "incidental runoff" since this is the most controversial part of the Amendment in our view. To leave it out while mentioning the other topics is misleading.

While the Amendment addresses three main types of discharges, the title refers only to storm water and "low threat" discharges. Yet the "low threat" category covers two entirely different types of discharge. This is confusing, because one type of "low threat" discharge pertains to planned and more easily controlled discharge activities, whereas the other refers to unplanned "incidental" (accidental) discharges. In the interest of clarity, we recommend that the title should either mention all three types or be shortened to the following: "*…establish exception criteria to the point source waste discharge prohibitions by revising certain action plans*."

This critique may seem trivial, but we find that whenever this issue is discussed, and the words "incidental" and/or "low threat" are mentioned, people immediately respond, "Oh, sure…" with disbelief in their voice. People are becoming more and more aware of all the unregulated and under-regulated toxins in wastewater and their credulity is stretched by these terms. Finally, it is ironic that the title is so very complex and difficult, whereas the terms "low threat" and "incidental" give an impression that is misleading in their simplicity.

By referring to two very different types of discharges as "low threat" it is very difficult, as one reads the document and Appendices, to know which type of "low threat" is being referred to throughout. It makes for very confusing, and sometimes incomprehensible reading. All discharge water is not equal, and this language giving the impression that it is, obfuscates the differences. It causes enough of a problem that we recommend rewriting the document.

Purpose of Amendment……

Staff comments on this Amendment indicate that its purpose is to address the "conflict" between North Coast Basin Plan limits and those of other Districts. The impression given was that North Coast limits are much too stringent, yet how can the "low threat" nature of the impacts be assumed until a full TMDL process is conducted for impaired waterways?

In the Introduction (Staff Report) on page 1-2, states that "low threat" discharges could exceed 1% of the receiving stream's flow during the discharge season. In context, the full implication of this statement was unclear to us. Which discharges are referred to here? Could this policy allow for more than 1% on low threat discharges? Would this amount be in addition to other 1% discharges? It is unclear what discharge amounts are expected under the "Low Threat Action Plan", especially the part on "incidental runoff" since we know of no 1% limit during the summer discharge prohibition period, when most of the irrigation runoff would occur. Could this refer to pre-planned releases only? Does this mean that any individual discharge could amount to up to 1% of the flow? Where are the cumulative impacts of numerous incidental discharges addressed?

It is stated that exceptions to the 1% prohibition might be allowed if exception criteria are met. We assume that the winter limits are being referred to here, since we are not aware of any 1% allowances from May 15 to Oct. 1. Reference is made to Item 5, Page 4-1 in the Basin Plan where it describes exception to the 1% limit. Does this section apply to "incidental runoff"? Would discharge amounts in the discharge season be deducted from Santa Rosa's daily limit?

The one percent limit in the Basin Plan clearly applies to the discharge season from Oct. 1 to May 15. It states that, "*There shall be no discharge of waste during the period May 15 through September 30.*" (P. 4-2.00) Are there now some circumstances when discharges will be allowed during this prohibition period?

Will you then be altering the statement in the Basin Plan quoted above to state that under SOME circumstances a discharge would be allowed during the discharge prohibition period? If that is the intent, then it is really no longer a discharge prohibition period and current language sets up an ambiguity that is very confusing. We understand that you are referring to this as "exceptions to the seasonal discharge prohibition" and what we are saying is that it is not a **prohibition** if you allow exceptions. The word "prohibition" is a very strong word and means the act of forbidding something.

It is our impression that the 1% reference has always referred to point source discharges from sewer treatment plants and not individual sites, which are the subject of this Amendment. Could it be there is a transfer of meaning here indicating that any discharge flowing into a storm drain regulated by a Storm Water NPDES permit, can also apply to summer discharges that utilize the same drainages? This appears to sidestep the original intent of this process, which was to address winter runoff flows. Does a 1% limit now apply to storm drain discharges? How many discharge points exist? Would they each be able to exceed 1%? Would the 1% be based on the Hacienda Gauge, as the Treatment Plant is? If not, how would the 1% be measured for storm drain discharges? Please clarify this issue.

The meaning is ambiguous here. It states (page 2), "*The proposed Low Threat Action Plan would also allow for exceptions to the one-percent prohibition for low threat discharges if a discharge meets the Basin Plan criteria for exceptions to the one-percent prohibition….These criteria include, in part, that the treatment facility is reliable, the discharge is limited to rates and constituents which protect the beneficial uses of water, and that alternatives to the discharge were analyzed*." What is unclear is how you can take these Basin Plan descriptions that clearly relate to treatment plants having NPDES permits and on site treatment systems and apply them to construction and other individual sites where the same controls clearly do not exist? (For instance treatment plants have trained, certified employees who have been extensively educated in treatment plant management and operation.)

What is a "reliable" treatment system? There are few treatment systems in our area that have gone more than two years without a violation. Would they be considered "reliable" anyway? Please clearly define "reliable" here, including the numbers and types of violations that would NOT be considered a problem. How do you determine "rates" and "constituents" that protect beneficial uses?

There has been a tortuous history to defining and holding the City accountable for biostimulatory substances and the contribution by wastewater to severe nutrient pollution in the Laguna. Once the wastewater has been applied to the landscape, how can one know whether it was the wastewater that provoked more nutrients into the stream, or applications of soil amendments, fertilizers, pesticides, etc. How might an unexpected summer rain exacerbate the nutrient

problem if it comes soon after a wastewater application and flows into low flowing creeks, heated by the dry hot sun?

Furthermore, there is no discussion of receiving water conditions during the discharge prohibition period, nor what specific types of limits would be considered protective of beneficial uses under the degraded circumstances of summer low flows. In particular, there is no discussion of what protections would be afforded the extremely impaired Laguna and how the Antidegradation Policy would be applied for "accidental" discharges during low flow summer periods, especially where no numerical maximum is even suggested for the "incidental" category. We strongly recommend that an upper numerical limit be defined. Why has this Amendment avoided naming a specific numeric upper limit?

Since many North Coast streams are declared impaired, and that is a special local circumstance, the main justification for this Amendment should not be to lower North Coast limits just to be in line with lower limits in other parts of the State. If that is not the case, then a great deal more information needs to be provided on beneficial use impacts before this Amendment is approved.

The latest version of the State Recycled Water Policy clearly states that individual Boards can implement their own more stringent requirements, based on specific needs of the local environment. RRWPC fails to see why getting in line with other jurisdictions won't DECREASE water quality protections on the North Coast? Resolving a conflict of differing water quality regulations from other areas should not take precedence over maintaining water quality.

Another major justification for this Amendment, according to staff, is to get a handle on a problem that is already occurring, such as the extensive over-irrigation that now occurs. Yet it is unclear whether this Amendment will even address all the potable water runoff, but rather seems to focus on control of wastewater irrigation runoff, even though relatively little currently exists. Rather, the City of Santa Rosa is planning a large urban irrigation program that will ultimately add two billion gallons a year to lawns that currently uses potable water for irrigation. There is ample evidence to conclude that the "incidental runoff" portion of this Amendment is intended to address a project that has not even happened yet.

Criteria are listed for low threat discharges on page two of the staff report, but these criteria are so general and so ill-defined that it is really impossible to know how they will protect beneficial uses and water quality. The term non-storm water runoff does apply to over-irrigation with water as well as wastewater, since RB staff has expressed concern about the chlorine in potable water. We have never heard this concern expressed before. We had been under the impression that chlorine dissipates rapidly, especially when exposed to light. What is the chlorine residual in drinking water? It seems as though we should

be very concerned about our health if this is a major issue, because of the dangers of chlorinated by products. Please provide more information on this issue.

This presents an interesting and heretofore unaddressed issue. If this Amendment requires that as yet unwritten BMPs be met, we wonder if those BMPs will also address excessive discharge with water as well as wastewater? Also not mentioned is whether these rules will apply to all sites where irrigation occurs, or just certain ones? Will the City of Santa Rosa be required to implement BMPs for any kind of irrigation on any kind of property? If this Amendment applies to only certain properties, and/or certain kinds of water, then that needs to be spelled out and potential impacts identified. That is not addressed in this document.

In the description of the "No Action" alternative on page 11 of Appendix D, it states that the Regional Board would not be able to work with entities that currently experience over-irrigation (if this alternative were selected) and it would prove a disincentive to water recycling projects. Yet there are other unmentioned motivations for producing the desired results, and good things can still happen without the Regional Board's involvement. Certainly the water shortage, the low flow proposals in the Biological Opinion, global warming, significant increased water costs, draught, etc. may force the conservation issue, which you are not mentioning at all, and the need to switch to draught resistant landscaping, among other things. This Basin Plan Amendment seems to encourage a much less sustainable direction while avoiding the discussion of all the chemicals and pharmaceuticals that will end up at the Geysers making energy instead of all our waterways if this Amendment is not approved.

Project Description and focus of comments..

This proposed amendment addresses three types of urban runoff into Russian River tributaries. First, it addresses the need for numerous actions to be implemented for the purpose of preventing or greatly inhibiting storm water runoff that carries pollutants into streams during winter rain conditions. We support these efforts to ameliorate conditions that speed the flow of pollutants into our waterways. Cities should be held responsible for the timely implementation of Best Management Practices (BMPs) that facilitate control of this runoff. This is an ongoing program which has been evolving over time.

This Amendment merges the concepts of polluted runoff from natural storm water resulting from heavy rain running across polluted landscapes, and planned and unplanned (irrigation) runoff (non storm runoff) created by humans as they hydrate their landscape. One is a result of natural conditions (rain) and the other totally the result of human activity. One is primarily a winter program and the other mostly summer. This Basin Plan Amendment process merges three different kinds of circumstances that have been addressed separately in some respects but not others. It is left unclear how their environmental circumstances

differ significantly from one another and the separate conditions presented by each (i.e., the various stream flows that can alter discharge impacts considerably).

Secondly, this proposed amendment addresses situations that may occur any time of year, where a planned discharge is necessary for an activity that serves the public benefit and is determined to be of low threat to the environment. This includes well and public infrastructure testing, construction dewatering, and other similar types of point source discharges that supposedly pose a low threat to water quality, yet technically must be regulated under an NPDES permit.

Because these latter discharges are planned activities and careful monitoring, execution, and oversight can be timed and developed in advance in order to have the least impact on the environment and water quality, we have less concern about this part of the Amendment at this time. The criteria on page 4 and 5 of the Staff Report appear to adequately address the implementation requirements that must be met by dischargers.

It is the third proposal that causes us great concern, and includes allowing non storm water runoff and/or "incidental" runoff that cannot be planned in advance. The proposed amendment characterizes this runoff as "low threat" and defines it as "…*incidental discharges that are unanticipated, accidental and infrequent*." Originally this was going to be dealt with as a separate Basin Plan Amendment, but now relies on future implementation of Best Management Practices that have not been developed as yet. We are sorry that you did not follow the original plan, as we cannot support this part of the Amendment in its current form. We request that you remove this part of the Amendment until a later time when BMPs to protect water quality can be examined and commented on by the public and other of our concerns about protection of beneficial uses can be more fully addressed.

In regards to the Action Plan for Storm Water Discharges, including Non Storm water discharges, we resubmit our comments on the proposed Storm Water Permit to be considered as part of this Amendment. We questioned the assumption that it was appropriate to include Non Storm Water discharges along with those occurring as winter storms. Stream conditions are totally different in summer than winter and the impact of such discharges are much greater in the summer time. We don't recall any detailed analysis of water quality conditions through the various seasons and the consequent variations in water quality impacts that might occur.

In the middle paragraph on Page 2 in the Introduction, it refers to reliance on BMPs for compliance with water law requirements, yet no details are given about the nature of the discharge, the amount, or any other details that are necessary to assure protection of beneficial uses. It is stated that exceptions to point source prohibitions would only apply to discharges that are a low threat to water quality. Is this defined as meeting Title 22 standards? Another issue is the

point at which the water quality is determined. If it is determined at the treatment plant, that could be problematic since water quality deterioration could occur in transport. Will there be water quality standards at the site where application will occur?

Page 3 states that eligible "low threat" discharges **meet all water quality objectives**. Which objectives are referred to here? Will they meet all Basin Plan objectives? How will you know this is the case? When and where will monitoring occur to assure high quality discharge?

The definition of "incidental runoff" is repeatedly defined as small amounts of accidental discharges. Yet there is never any gallon amount mentioned. There is no way to know when a minor problem becomes a major one. There needs to be a maximum amount defined. Also, we fail to see why this Basin Plan Amendment is necessary for broken sprinkler heads, an example that is continually mentioned. Has anyone ever sued or regulated such an incident? Is it such a problem that it needs to be regulated?

In regards to the low threat discharge, along with the incidental discharge, there is no indication of what the cumulative amounts would be and how they would be managed to avoid cumulative impacts? Are you expanding the types and number of projects that would be eligible under this permit? What new categories are being added? Is it possible that the list of categories is not definitive? What categories might be added after the Amendment is approved?

What conditions will be required to assure that Antidegradation rules are enforced? The requirements for low threat discharge on page 5 seem fairly comprehensive, but they don't really say how cumulative impacts will be assessed. What if there are 2-3 projects at the same time in general proximity to one another? How would priorities be established? Since the Basin Plan requires a summer discharge prohibition period, and since storm water excursions are always in the winter discharge period, and since water quality objectives are set with the assumption that there is no summer discharge, will there be any special standards imposed to compensate for discharges during low flow periods? Furthermore, would the same standards apply for discharge into an impaired water body? How would you determine for instance that the special discharge is not creating a nuisance from biostimulatory substances?

In the State's Water Recycling Policy, they put a lot of effort into addressing problems with salts and nutrients. How will that be integrated into this Amendment?

Relationship to State Recycled Water Policy & MS4 Permit…..

The State has recently closed its comment period on its Recycled Water Policy and it feels premature to move forward with this Basin Plan Amendment until that process is complete. Since they are so close to approval, it might be helpful if the comment period for this Amendment were extended to a few weeks after the

final approval on the State Policy. The way things are now, the final version won't be known until after the comment period closes on this Amendment. There's also lack of clarity about the relationship between this Amendment and the new Recycled Water Policy.

There were numerous comments from notable environmental groups challenging the validity of the State's policy, although we don't anticipate any significant revisions to the final draft at this point in time. Some of those comments will be integrated into this document and attached in full. In many cases, they are applicable to this proposed Basin Plan Amendment. We also attach RRWPC comments and attachments submitted to the State Board on their Recycled Water Policy.

Furthermore, this Amendment is closely linked to the proposed MS4 Permit that was recently withdrawn for revisions and we have been told will be recirculated soon. Are antidegradation requirements meant to be fulfilled through the MS4 Permit or the General Permit, which has not yet been released? Since the final contents of the MS4 Permit are unknown, that leaves a vacuum for commenting on the means of compliance. In either case, how is it possible to address impacts to beneficial uses without having more information? What is the relationship between the Basin Plan, the General Permit, the MS4 Permit, Title 22, and Antidegradation Policy in regard to the issue of incidental runoff?

Linda Sheehan, in her June 26, 2008, comments on the proposed Statewide General Permit for Landscape Irrigation Uses of Recycled Water makes the case for a joint NPDES/WDR permit. We are happy to note that this Amendment requires such a joint permit. In her comments, Linda bases the need for a joint permit on AB 1481, which assumes that irrigation will occur consistent with state and federal water quality law. These include Title 22, Anti-Degradation Policy, Clean Water Act, Porter-Cologne Act, and requires demonstrated protection of ALL beneficial uses. She does not believe that run off could be regulated through MS4 permit. I had the impression, in commenting on the MS4 Permit, that it would have requirements that are similar to the non-specific ones listed in this Amendment (on incidental runoff). Can you clarify how you see this issue?

We are left wondering how all of these regulations will be implemented and enforced through the Basin Plan process? Linda had suggested that permits should have suppliers and users enter into a contract where each is responsible for portions of the system. Supplier would be responsible for water quality treatment and monitoring and users would be responsible for irrigation practices and prevention of runoff. It should also include site-specific pollution prevention plans. We think this is a good approach.

She also suggests, and we support, that each new project would require a new permit application with application subject to a 30day review period and she

recommends adoption of a pollution management plan. Also fees should be charged for the program that replace the cost of review, management, and enforcement of permit. (as in AB 1481)

RRWPC suggests that BMPs be assessed BEFORE this Amendment is certified. We would like to see the following required (partial list):

- A maximum numerical amount be defined for "incidental runoff";
- Setbacks from creeks be required, with much greater setbacks in proximity to 303(d) listed creeks (600' would be appropriate as with AB 885);
- No irrigation be allowed on lawns that have been treated with pesticides, herbicides, soil amendments, fertilizers, etc.;
- That irrigation only be applied at agronomical rates;
- That multiple violators of wastewater irrigation rules not be allowed to irrigate with wastewater for at least a year, if not cut off entirely;
- That the program be revisited after the second year of implementation and annual reports written in detail to evaluate any problems;
- That a public review process be included with that review;
- That performance standards be developed and tracked;
- That independent water enforcement program be established to check irrigation sites unannounced on a regular basis;
- (Linda Sheehan): requested a re-opener clause be provided as new information about unregulated and other contaminants becomes available and new regulations are needed;
- (Environmental Law Foundation): "*The state or regional boards shall require an individual permit whenever public comment or the agency's own determination demonstrates that the proposed activity may result in an unreasonable lowering of water quality*."

We agree with Linda's suggestions, but in terms of this Amendment, we won't know which BMPs will be selected for implementation, or whether these recommendations have been incorporated, until long after this Amendment is authorized. That leaves us with great discomfort about it, since so much is at stake. Furthermore, we wonder why a permit can't be written that still prohibits all discharges during the prohibition period, while establishing BMPs for controlling runoff? The Regional Board has never enforced the prohibition for such things as "broken sprinkler heads" so we fail to see why this Amendment is really necessary.

Concerns about including "incidental runoff" in Basin Plan :

Any alteration in the Summer Discharge Prohibition in our view is backsliding and we believe contrary to the Anti-degradation policy, especially where the discharge is "incidental" and "accidental" and enters a severely impaired water body. Staff has freely admitted that this Amendment is necessary to address excursions and violations of current policy that regularly occur. Page 3 of

Appendix B states, "*Due to the unplanned nature of incidental discharge, this category of non-storm water discharges poses a slightly greater risk to water quality due to the potential for higher levels of pollutants and less opportunity to control the rate, volume, and timing of the discharge*".

Given the extensive number of unregulated and under-regulated pollutants, especially in wastewater, but also applied to landscapes, we believe this is an understatement to say that the risk is only slightly greater. Where is the scientific evidence to validate this statement? We fail to see the logic in justifying an activity that you admit is causing harm. (See section on emerging contaminants)

Assuming that by applying BMPs to an activity you will control the amount of harm caused by it, is totally unsubstantiated. There is great harm that can be caused by small amounts of certain pollutants in certain locations at certain times and imposing BMPs (while legalizing a currently illegal discharge) will not assure that beneficial uses will be protected. (See later section on antidegradation) Furthermore, antidegradation rules require protecting water quality, not beneficial uses.

Santa Rosa has had numerous conservation programs in place for several years now, and we have no doubt that some have been effective, Yet, we have not seen an analysis of actual water saved as a result of these programs and it is unclear what their exact effectiveness has been. It would be helpful if the water savings of each of program could be demonstrated.

For instance, in 1999, Santa Rosa adopted a Water Waste Ordinance which prohibited water waste resulting from unattended open hoses, broken irrigation heads, property side plumbing leaks, and/or excessive irrigation resulting in overspray or runoff. Over-irrigation with potable water has been rampant in Sonoma County and runoff well documented in the Press Democrat during recent water short summers. RRWPC also has photographs of extensive runoff occurring in embarrassing places such as the front of Regional Board and City offices. Furthermore, a City employee admitted privately awhile back that the business park across from the Utilities building on Stony Point regularly had irrigation runoff.

We don't question the devotion and capabilities of City staff in charge of these programs, we just wonder if they can deliver on all the promises being made around this wastewater irrigation program? If runoff has occurred, how can we consider the Water Waste Ordinance effective? How can we trust future Ordinances concerning wastewater reuse?

We have also raised concerns about irrigating small parcels. Santa Rosa staff have not focused on such use, but they also have not taken it off the table either. The construction of a very expensive pipeline system will motivate them to ultimately pressure all property owners along the pipeline to hook up, in order to be be cost effective. The Regional Board cannot be everywhere at once and we

are concerned that project implementation would ultimately break down and no one would know about it, especially if staff cut backs keep happening.

Other options to proposed Amendment….

The Clean Water Act, the Porter-Cologne Act, and the Antidegradation Policy provide the legal authority to stop over-irrigation from happening now, especially with wastewater, without a Basin Plan Amendment. The Basin Plan Amendment is needed, as admitted in this Report and by the City of Santa Rosa, not to enforce clean water law, but rather to eliminate the possibility of citizen lawsuits when excessive irrigation runoff occurs. (By not defining a numerical limit to "incidental" runoff in this Amendment, in our view, it opens the door for a great deal of misinterpretation, diminishing the viability of citizen lawsuits, should they become necessary.

Also, staff seems to assume that incidental runoff can be controlled so as to not cause environmental harm, but we wonder why we need a Basin Plan Amendment to prevent litigation over broken sprinkler heads, the reason usually given for needing this Amendment? The real problem is mostly with over-irrigation, NOT broken equipment. Why can't these runoff incidents continue to be addressed through other requirements as supposedly happens now with RRCSD and other dischargers?

The proposed NPDES permit renewal of the Russian River County Sanitation District (RRCSD) acknowledges the issue of "incidental runoff". In attachment G: Water Reclamation Requirements and Provisions on page G-1 they address "incidental runoff" as coming under Title 22 and states that "incidental runoff" should be addressed in a Title 22 Engineering Report for the use of wastewater for irrigation and requires certain measures to prevent this from happening.

While the permit considers any runoff into waterways a violation and subject to enforcement, the Findings also state, "*Incidental runoff is defined as runoff that is unintentional (e.g., accidental breakage of a sprinkler head) and not associated with negligence on the part of the discharger or the recycled water user. These incidents are typically infrequent, low volume, accidental, not due to a pattern of neglect or lack of oversight, and are promptly addressed. The Regional Board recognizes that such minor violations are unavoidable and present a low risk to water quality. Incidental runoff incidents shall be summarized in the Discharger's quarterly recycled water monitoring report. Enforcement action shall be considered where: 1) there is inadequate response by the Discharger to incidental runoff incidents; 2) there are repeated runoff incidents that were within the Discharger's control; 3) incidental runoff directly causes violations of water quality objectives; 4) there are incidents that create a condition of pollution or nuisance, and 5) there are discharges that reach surface water in violation of discharge Prohibitions in section III of the Order and/or Water Reclamation Requirements and Provisions specified in Attachment G of the Order*." It appears as though the Regional Board, in the case of RRCSD has found a perfectly acceptable way of

regulating minor runoff from such things as broken sprinkler heads without a Basin Plan Amendment. Why can't you do this with other dischargers?

That takes us back to the original statement that the North Coast Basin Plan has to allow "incidental runoff" simply because the other Regional Boards do so and the State is pushing for it. The Nov. 4th draft of the proposed State Water Policy states (page 2), "*….it is the State Water Board's intent to maximize consistency in the permitting of recycled water projects in California while also reserving to the Regional Water Boards sufficient authority and flexibility to address site-specific conditions*."

In order to address site-specific conditions Best Management Practices are necessary to address specific issues in our area. While you have promised to do that AFTER the Amendment is approved, the California Water Code, Section 13242 states that "*The program of implementation for achieving water quality objectives shall include, but not be limited to: (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private, (b) A time schedule for the actions to be taken, (c) A description of surveillance to be undertaken to determine compliance with objectives*." Based on Section 13242 of the Water Code, we wonder whether the implementation program is required to come forth at the same time as the Amendment?

The implementation program needs to be developed in **conjunction** with this Amendment since the Amendment will severely constrain the right of citizens to sue under the Clean Water Act if excessive problems and pollution occurs and the Regional Board fails to take action. Because there is no clear-cut numerical definition of incidental runoff, we believe there is too much flexibility in determining when it applies. For instance, how does one prove that a runoff event was accidental, if it is the first time it occurred in a given location? Just because it's a first event, does not mean it was accidental. What if the only way you can know the turth, is to prove someone's intent at the time of the accident. Is this feasible?

We are equally concerned that the only specific circumstance of incidental runoff described is with a broken sprinkler head. What other accidents could occur and still stay within the perimeters described? The City wants this Amendment so badly that we can't help but wonder what other incidents they anticipate? We do not think that descriptions of the type of likely situations are explained in any of these Amendment materials. Yet, on page 12 of the Introduction to the Staff Report it states, "*However, this approach does not address permittees concern that they could be vulnerable to third party lawsuits as authorized under the clean Water Act because the discharge is still a technical violation of the Basin Plan*." Is the Regional Board putting forth this Amendment to simply assuage the City's fears?

We believe that the definition of "incidental runoff" is much too subjective, and contains very few perimeters that are not wide open for personal interpretation. Because the definition is so non-specific, we believe that it would be extremely difficult for citizens to prove that a violation has occurred, and as stated before, it would put a chilling effect on citizens' right to sue. Given the sad state of our impaired Russian River and its tributaries, the current break down of California's economy, and the failure to effectively deal with emerging contaminants, it is a fantasy to assume that water quality will be protected from the hazards of irrigation on water quality.

Also, while the Amendment would be part of the Basin Plan, it contains no analysis of specific Anti-Degradation requirements, assessments of current water quality (other than to allude to listed impairments), nor assessments of the current status of beneficial uses and how they will be protected. A cumulative impacts analysis of discharge events into creeks that are severely impaired and containing very little flow is needed. The public should be able to assess that information, which is critical to assessing the viability of this Amendment, BEFORE the Amendment is approved. In fact, none of this should occur until the Laguna TMDL is complete.

The environmental assessment (Appendix D) relies on future BMPs to provide the findings for little or no impacts. This is illegal under CEQA. Is it allowed under this CEQA equivalent process? Aren't the specific means of compliance required to be part of the Amendment? How can you identify impacts otherwise? **To simply assume that water quality goals will be met and no impacts will occur because of some future activities that have not yet been defined seems totally inappropriate**.

It is also unclear in the introduction (staff report) whether the point-source (storm water) categories represent polluting activities that are currently illegal or whether there is currently no regulation over such activities (i.e., over-irrigation with water). If discharges are currently illegal, then it should just be a matter of implementing current law, not downgrading regulations in order to manage illegal practices. In fact, why wouldn't full application of the Antidegradation Policy address the need for regulation over low threat discharges? In other words, one justification for this Amendment is that violations of the Discharge Prohibition are currently happening. Why can't BMPs be required under current regulations? Why is this Amendment necessary to get dischargers to develop BMPs and programs to manage these problems?

Another aspect to this issue is that we wonder why there has been no characterization of current irrigation programs and their histories? We wonder to what extent Rohnert Park's wastewater irrigation program is contributing to the massive and uncontrollable Ludwigia problem? What is the history of problems with Windsor's program, especially in regards to nutrients? What is the situation with invasive plants in the Windsor area? How much new irrigation

would occur once this Amendment is approved? What creeks will be potentially impacted by this Amendment? Why was there no description of the condition of the creeks? (There are many, many creeks running through the urban areas and feeding into the very impaired Laguna. How much wastewater might these creeks be exposed to?) What are the requirements of the Endangered Species Act and the Biological Opinion on these creeks?

Lacking the actual BMPs makes it impossible for the public to assess the impacts connected with this Amendment. We just learned of the following document prepared by the Sonoma County Water Agency (SCWA), about to be released by the Board of Supervisors. It is the *Draft Environmental Impact Report for Public Review for the Stream Maintenance Program*. Although we have not seen this document, we know that the streams of concern are ones that have serious Ludwigia problems and receive irrigation waters from Santa Rosa, Cotati, and Rohnert Park. We wonder how this Amendment will affect and be affected by this Basin Plan Amendment? If even minimal discharges exacerbate the Ludwigia problem, how will this affect SCWA's Stream Maintenance program and impacts analysis? We believe that environmental analysis with this Amendment should address the impacts noted in that document in relation to this Amendment. Has this been considered? The same should be true for the Biological Opinion and projected changes to Decision 1610.

As previously mentioned, we believe that the driving force behind this Amendment is Santa Rosa's commitment to designing and constructing a $150 million dollar urban wastewater irrigation project (not counting $100 million for storage). There is talk about managing this project in a way so as to minimize runoff, and a program has been devised to ostensibly assure the State that extensive controls would be implemented, but it is really a big experiment, and no one knows for sure whether it will all work. It involves a huge trust factor that city staff will carefully monitor activities delegated to building managers in implementing the program and that somehow the Regional Board will be told the full truth about how they are doing.

Given the dire state of governmental budgets these days, we are most concerned that regulation will fall far short in its goals, once this program is permitted and implemented. We are also concerned that part way through they will run short of money and will short cut the process. Because they will have probably invested a substantial amount at that point, the pressure to loosen regulations will be intense.

Santa Rosa has stated repeatedly that they will not do a potable water offset irrigation project unless they have this Amendment because they are concerned about third party lawsuits. Yet we can't help but wonder if there are much better ways to accomplish their goals of increasing their water supply, such as focusing on promoting draught resistant landscapes and repairing leaky infrastructure.

There may be many years where they don't even have enough water available to do an irrigation program. For quite some time, Santa Rosa's wastewater ponds have been very low. In addition, to their credit the City has been actively pursuing incentive programs to get people to use draught resistant landscaping. With severe water shortages possibly imminent, the motivation for these programs may become intense. Conceivably, the need for irrigation program could even go away.

Furthermore, there has been absolutely no mention in this process about the possibility of providing higher treatment for the irrigation water. If they want the project so badly, they could install a reverse osmosis process for irrigated water. People in the North County have been making that suggestion to SCWA for years in regard to their proposed agricultural irrigation program. If they were to do so, the opposition would probably go away. Yet no one is mentioning this possibility.

The Amendment language depends for implementation and enforcement on a BMP program that has yet to be proposed and approved. It is impossible to assess whether and how Beneficial Uses will be protected by BMPs when we don't know what BMPs will be required. Furthermore, where a General Permit is allowed, there won't be the opportunity for regular public input on individual proposals. How will interested public be able to track whether those uses are actually protected?

All current regulations, including Basin Plan requirements, ascribe to protecting those uses, and yet we have impaired, and in some cases severely impaired water bodies, we have important species threatened and going extinct, we have bacteriological problems with unknown sources, we have invasive plants growing wild and providing habitat for disease causing vectors, yet we are supposed to rest assured that these yet unknown BMPs will prevent the problem from getting worse and would supposedly even improve the situation?

We have found the environmental assessment very weak as it relies on the assumption that this Amendment will control all project hazards and that future BMPs will be adequate. For this reason, we have not spent much time analyzing its content.

Need for TMDL before Amendment approval….

Merging storm related flows and its management, "low threat" non-storm discharges from planned and relatively easily regulated human activities, with runoff from human activities that occur in a totally unplanned and sporadic manner, is not a good mix. Our greatest concern in this whole document is with the "incidental runoff" which needs to be defined much more clearly because of its unplanned nature. The current water quality status is given only cursory review and relies on future determinations.

The best example is the nutrient pollution causing the Ludwigia problem in the Laguna. In the last 1.5 years the problem has been allowed to proliferate. We have included the Final Ludwigia Report published by the Laguna Foundation in 2007, when their Ludwigia program ended. We have attached a photo that shows the Stony Point (just south of Rohnert Park Expressway) location in 2008. You can see that the plant fills about 90% of the channel and the problem is worse than ever. This problem is probably addressed in the Channel Maintenance Report by SCWA that just came out and we haven't read yet. We have heard however, that they want to dredge the channel. Ultimately the plant will probably come back no matter what they do unless riparian vegetation is planted to shade the stream and nutrient sources are severely cut back. As long as Rohnert Park irrigates, the problem will probably continue. The problem, we have been told, is equally severe just north of Occidental Rd. in the Laguna.

What has been done to hold Rohnert Park accountable for irrigation practices? Is there anyone watching the store, so to speak? Will Rohnert Park be held accountable not only for irrigation runoff with wastewater but also water if this amendment goes through? What will be done to control that? What's happening with the TMDL for nutrients in the Laguna? How will this issue be addressed through the TMDL process (i.e., justifying "incidental" runoff in light of this dire problem?)

Finally, we'd like to enter a document into the record by reference, that your staff helped produce. It is called, "The Altered Laguna: A Conceptual Model for Watershed Stewardship" and was authored by the Laguna Foundation, Tetra Tech, Inc. and Philip Williams & Associates, Ltd.

This document detailed in great depth the information needed to develop a model on Laguna water quality and was intended to be the first step in the TMDL process. It's focus was on nutrients, much to the consternation of Dr. Dave Smith. The document was mostly paid for by the City of Santa Rosa as part of a legal settlement from about irrigation runoff in the Laguna. It is noteworthy that one primary motivation for the "incidental runoff" portion of this Amendment is to protect the City of Santa Rosa from further citizen lawsuits.

At any rate, while I don't have time to bring forth the very valuable information within the document that is very pertinent to Laguna water quality, I want to make sure it is in the record. We wonder why there was no mention of this in staff comments? (At least we didn't notice any.) The information contained in it was gathered from all the different sources available, but they also identified critical information that was lacking. At the very least, before approving this Amendment, the issues raised need to be addressed. No where in the document does it say that current water quality standards controlling discharge is either protective of beneficial uses or water quality.

Comments from other environmentalists….

RRWPC has summarized pertinent points in several comment documents by knowledgeable environmentalists. Most were comments on the State Recycled Water Policy (by Bill Jennings, Dr. Edo McGowan, and Linda Sheehan, etc.) and also two letters by the Environmental Law Foundation on the Revision of the State's Antidegradation Implementation Guidelines. We have attached the original documents.

It is interesting to us that many of the concerns we have raised over the years about inadequate environmental protections in Basin Plan Amendment language, as well specific permit language are detailed independently in these comments by people who know the science and the law much better than we do. They give substance to the issues in a way that we never could and they provide authority to our concerns that this Amendment will not adequately protect the beneficial uses and the entire ecosystem of the Russian River and its tributaries.

Linda Sheehan's comments on Statewide General Irrigation Permit…

The following paragraphs are taken from Linda Sheehan's comments on the Statewide General Permit for Landscape Irrigation Uses of Recycled Water (pages 10-11) (We include the whole document in our attachments and quote from several relevant paragraphs here.)

"Both federal and state law place limits on areas where recycled water can be used in landscape irrigation. Since recycled water is a waste that contains pollutants, the State Board should be certain that the discharge of these pollutants will only occur in allowable amounts to areas that require special attention to prevent degradation, or will not occur at all to areas into which the law prohibits pollutant discharges. For example, the General Permit should not be available: (1) where discharges from landscape irrigation projects may reach areas of special biological significance (ASBS), (2) where they may reach water bodies on California's Clean Water Act section 303(d) list of impaired water bodies (303(d) List) for pollutants in the recycled water supplied, (3) where they may reach groundwater already impaired by pollutants in the recycled water supplied, or (4) when a receiving water requires special attention to ensure its protection."

Furthermore, on page 11 it states, "*Second, EPA regulations prohibit the State Board from authorizing any new discharges of impairment-causing pollutants to any water body on the 303(d) list. In Friends of Pinto Creek v. EPA, the Ninth Circuit ruled that 40 C.F.R. Sec. 122.4, which establishes prohibitions on permit issuance applicable to all NPDES permitting authorities, prohibits the issuance of permits for new discharges of pollutants to water bodies identified as impaired on a 303(d) list. The Court affirmed the categorical prohibition on permitting new discharges in situations where a TMDL has not been prepared, and noted the limited exceptions provided for in situations where a TMDL has been prepared. Under the limited exceptions applicable only when a TMDL exists, a permit authorizing discharges to an impaired water body is only allowed when the discharger can demonstrate that there is a sufficient load allocation to accommodate the discharge, and that all dischargers to the water body are subject to compliance*

schedules designed to bring the impaired water into compliance with applicable water quality standards. The specific showings a discharger must make in order to obtain permit coverage when a TMDL has been prepared are not conducive to a general permitting scheme. In order to be certain that the State Board does not issue a permit that allows discharges when it should not (or when the required analyses to protect water quality have not been completed), the State Board should not make the General Permit available to cover discharges to 303(d) listed water bodies that are listed for pollutants in the recycled water waste stream."

(Pg. 12) "*Similarly, landscape irrigation projects occurring within a minimum distance of a surface water body should not be eligible for coverage under the General Permit. The risk of pollutant loading in these waters from the landscape irrigation project is too high, and therefore an individual permitting process for these projects is recommended. The State Board should establish minimum setback criteria in the general Permit to set the threshold for eligibility under the permit."*

"*Finally, landscape irrigation projects in areas with pristine ground waters, which could be defined as those meeting all primary drinking water MDLs, should also be excluded from eligibility under the General Permit. Along California's North Coast, 95% of groundwater wells tested met all primary MCLs. Protecting these pristine waters should be of paramount concern to the State Board, and all efforts should be made to preserve this valuable resource for the future*."

Linda expresses concern regarding Title 22 limits and the fact that these are not protective of aquatic life. Furthermore, Title 22 doesn't address emerging contaminants. California Toxics Rule contains limits that are far lower. She states on page 13, "*Considering the potentially devastating and long-term impacts of allowing the widespread release of pharmaceuticals, endocrine disruptors, reproductive toxins, and other emerging contaminants into the environment, the State Board must take a precautionary approach when setting permit limits and requirements in the General Permit for these contaminants. In other words, when the negative consequences to the public health and the environment of taking a certain action are potentially significant or irreversible, then the burden of proof to show the action is in fact NOT harmful should fall with the advocate of taking the action."*

Finally she calls for a "re-opener clause" so that limits can be revisited in the event of new information.

Linda notes, (pg. 14): "*…we caution the State Board not to oversimplify the cost-benefit analysis and fail to account for both the current and long-term impacts of allowing treated municipal wastewater to be spread throughout our entire environment in landscape irrigation projects, with unknown potential impacts. California has learned with experiments such as MTBE that allowing the spread of environmentally-persistent and toxic contaminants without full information and awareness of potential impacts can create enormous overall societal costs. The State Board must give appropriate*

consideration to the benefit to be gained by keeping these chemicals out of our waters in the first place when considering the maximum benefit to the people of the State of using recycled water for landscape irrigation."

Pharmaceuticals, personal care products, endocrine disruptors, etc.

Throughout this document, we have referred extensively to our great concern about unregulated and under-regulated toxins in wastewater. We have written extensively on this issue. In December we submitted extensive comments to the State Board on this subject and we incorporate much of what we wrote here. It is pertinent because, while the State refuses to deal with these toxins in any meaningful way, they nevertheless continue to cause harm to our aquatic life and our environment and possibly our own health.

The focus of our comments in this document is on the lifting of the summer discharge prohibition. This is a time when recreation is at its height and human exposure to pollution is most likely, although these chemicals of concern have been found in drinking water supplies around the United States and direct contact is no longer the only exposure path. While this Amendment is ostensibly to get an existing problem under control, it's true intent is to support recycling goals and the disincentive created by the right of citizens to sue as per the Clean Water Act.

The Biological Opinion is requiring SCWA to appeal to the State Board to change Decision 1610 in order to lower summer flows in the lower Russian River by as much as one third. We saw nothing mentioned of this in Amendment documents and the issue of water quality in relation to flows is a major concern. You are not examining the whole water picture and how all these factors affect water quality.

Here are my comments on unregulated toxins that were contained in my comments on the State Water Recycling Policy (Dec. 2008): These are just a small sample of the studies and information I have been collecting over the last 15 years.

Recent Articles & Studies on Species Loss & Endocrine Disruption:

- Aug. 3, 2008: Three important scientists stated: "*There is growing recognition that the diversity of life on earth, including the variety of genes, species and ecosystems, is an irreplaceable natural heritage crucial to human well-being and sustainable development. There is also clear scientific evidence that we are on the verge of a major biodiversity crisis. Virtually all aspects of biodiversity are in steep decline and a large number of populations and species are likely to become extinct this century*."

  And further, "*Scientists estimate that 12% of all birds, 23% of mammals, 24% of conifers, 33% of amphibians and more than half of all palm trees are threatened with imminent extinction. Climate change alone could lead to the further*

extinction of between 15% and 37% of all species by the end of the century." *Finally they say, "Everywhere we look, we are losing the fabric of life, it's a major crisis*."

(G. Mace of UK Institute of Zoology, Robert Watson from the World Bank, and Peter Raven of the Missouri Botanical Garden state, in the publication, "Nature"),

How does this policy protect threatened and endangered species in light of unknown and unregulated chemicals in the wastewater?

- Winter, 2008 issue of "The Drift", put out by Californians for Alternative to Toxics (page 4): " *Seven decades of using pesticides to grow food has devastated populations worldwide of our traditional agricultural helpers, birds, bees, frogs, and bats. Although toxic chemicals have been implicated as a root cause in their slide towards oblivion, the chemicals continue to be pumped into the environment*." Incidental runoff may cause the unintended consequence of allowing lawn chemicals to run off into waterways. What was considered in this regard during the formulation of the Policy? Why not prohibit wastewater irrigation on land that has been treated with pesticides? Also how would chemicals in reused wastewater and chemical applications on lawns interact with one another?

- August 3, 2008: "National Survey Reveals Biodiversity Crisis – Scientific Experts Believe We Are in Midst of Fastest Mass Extinction in Earth's History": "The American Museum of Natural History and Louis Harris and Associates, Inc., in conjunction with the opening of the Museum's new Hall of Biodiversity, developed a nationwide survey titled Biodiversity in the Next Millennium."

  Highlights: "*Seven out of ten biologists believe that we are in the midst of a mass extinction of living things, and that this dramatic loss of species poses a major threat to human existence in the next century*." "*This mass extinction is the fastest in Earth's 4.5 billion-year history and, unlike prior extinctions, is mainly the result of human activity and not of natural phenomena*." "***Scientists rate biodiversity loss as a more serious environmental problem than the depletion of the ozone layer, global warming, or pollution and contamination***." (emphasis added) Also, one result will be, "*Destruction of the natural systems that purify the world's air and water*." How might irrigated lands be affected by global warming? Would any chemical changes take place that could impact affected species?

- December, 2008: Chemtrust: "*Effects of Pollutants on the Reproductive Health of Male Vertebrate Wildlife: Males Under Threat" (page 4), "Many wildlife species are now reported to be affected by pollutants, and similarities can be seen in the effects recorded. The target sites, which are the focus of this review, include male developmental pathways. It is clear that structural intersex features, including effects on the male reproductive tract, result from exposure before birth. On the other hand, abnormal secretion of the egg yolk precursor protein, VTG, in*

male fish, birds, and reptiles, can result from later adult-life exposure to feminizing pollutants. VTG is normally produced in females, and when found in males in elevated concentrations it confirms the presence of sex hormone disrupting contaminants in the environment, and indicates feminization of the male. Reduced reproduction has also been included, although it may result from female or male reproductive impairment, or from lack of viability of the offspring." Would the State be willing to test for signs of feminization in areas where wastewater is applied? Could the policy be suspended in areas testing positive for endocrine disruption?

- March, 2008: AP Study on drugs in water supplies: (AP story by Jeff Donn, Martha Mendoza, and Justin Pritchard): "*A vast array of pharmaceuticals—including antibiotics, anti-convulsants, mood stabilizers and sex hormones—have been found in the drinking water supplies of at least 41 million Americans, an associate Press investigation shows*." During a five-month inquiry, AP researchers found that drugs were detected in the water supplies of 24 major metropolitan areas.

  In response to the question of how drugs get in the water, the article states, "*(it)…is flushed down the toilet. The wastewater is treated before it is discharged into reservoirs, rivers, or lakes. Then, some of the water is cleansed again at drinking water treatment plants and piped to consumers. But most treatments do not remove all drug residue*." It seems as though it would be valuable to test any wastewater to be irrigated for endocrine disruptors and not allow any irrigation with waters testing positive. Would the State be willing to make that part of this policy?

  The study found that many water systems do not test for pharmaceuticals; but only a few that tested had negative results. Pharmaceuticals were also found in ground water. "*Some drugs, including widely used cholesterol fighters, tranquilizers and anti-epileptic medications, resist modern drinking water and wastewater treatment processes. Plus, the EPA says there are no sewage treatment systems specifically engineered to remove pharmaceuticals*." At a conference last summer the director of environmental technology for Merck & Co. Inc., Mary Buzby stated, "*There's no doubt about it, pharmaceuticals are being detected in the environment and there is genuine concern that these compounds, in the small concentrations that they're at, could be causing impacts to human health or to aquatic organisms*." (This is particularly meaningful coming from a drug company representative.)

- Feb. 17, 2008: LA Times: "Study finds human medicines altering marine biology", by Kenneth R. Weiss: "*Sewage treatment plants in Southern California are failing to remove hormones and hormone-altering chemicals from water that gets flushed into the coastal ocean waters, according to the results of a study released Saturday*." "(The Study*) confirms the findings of smaller pilot studies from 2005 that discovered male fish in the ocean were developing female characteristics, and broadened the scope of the earlier studies by looking at an*

array of man-made contaminants in widespread tests of seawater, seafloor sediment and hundreds of fish caught off Los Angeles, Orange and San Diego counties. The results, outlined by a Southern California toxicologist at a conference in Boston, reveal that a veritable drugstore of pharmaceuticals and beauty products, flame retardants and plastic additives are ending up in the ocean and appear to be working their way up the marine food chain." And scientists add, "*Dilution is not the solution for some of these newer compounds, said Steven Bay, a toxicologist*…." The big issue is whether endocrine disruptors are ending up in the sediments and being reintroduced into the water column and whether these pollutants are situated in the estuary and ocean as well.

- July 10, 2007: "Down the Drain: Sources of Hormone-Disrupting Chemicals in San Francisco Bay" Environmental Working Group: "95% of wastewater samples show widespread use of chemicals" "*Advances in technology allow an unprecedented look at chemical contaminants in water bodies throughout the United States. In 2002, the first nationwide study of man-made chemicals and hormones in 139 streams revealed that 80% of streams tested were contaminated. (Kolpin 2002) Several of the chemicals examined are known or suspected of disrupting the hormone systems of animals and people. Of these, only a small fraction have been regulated at all, much less tested for toxicity, persistence in the environment, or other harmful characteristics, such as hormone disruption. Some of the same unregulated, widely-used , hormone-disrupting chemicals have been detected at trace levels in the San Francisco Bay (Oros 2002)*"…….

  "*Damage to the reproductive health of vulnerable fish populations may result in detrimental consequences to local fisheries and aquatic ecosystems; in addition, there is concern that people could become further exposed to hormone-disrupting chemicals by eating contaminated fish (Houghton 2007*)" "***Analysis of 19 wastewater samples for 3 hormone-disrupting substances reveals widespread contamination***."

- Dec. 16. 2008: "Ocean Scientists Urge New Administration and Congress for "Bailout" of Ocean Ecosystems and Economies", (from website: Oceana.org): Summary of main concerns by scientists about ocean conditions included over-fishing, climate change, nutrient and other pollution and synergistic effects. "*Efforts to reduce nutrient pollution in the United States have been only modestly successful, not only because of inadequate controls on emissions but also because degraded ecosystems resist recovery….Although scientists have observed progress in reducing toxic pollution, contaminants from human activities are distributed and persist over wide areas of the ocean, often resulting in subtle but significant effects on marine animals, even in remote polar regions*."
- Dec. 7, 2008: The most shocking to humans and perhaps the most attention getting; "It's Official: Men Really Are the Weaker Sex" by Geoffrey Lean (based on CHEMTrust report by Gwynne Lyons: "EFFECTS OF

POLLUTANTS ON THE REPRODUCTIVE HEALTH OF MALE VERTEBRATE WILDLIFE" The Independent (London, U.K.) The article quotes the author as saying, "*Males of species from each of the main classes of vertebrate animals (including bony fish, amphibians, reptiles, birds and mammals) have been affected by chemicals in the environment….*

Feminization of the males of numerous vertebrate species is now a widespread occurrence. All vertebrates have similar sex hormone receptors, which have been conserved in evolution. Therefore, observations in one species may serve to highlight pollution issues of concern for other vertebrates, including humans….

Fish, it says are particularly affected by pollutants as they are immersed in them when they swim in contaminated water, taking them in not just in their food but through their gills and skin. They were among the first to show widespread gender-bending effects. Half the male fish in British lowland rivers have been found to be developing eggs in their testes….more than three quarters of sewage works have been found also to be discharging demasculinising man-made chemicals." (Note: Europe is way ahead of the USA in testing for these emerging contaminants. In the US, most sewage treatment plants really don't want to know.)

And more alarming…."*And a study at Rotterdam's Erasmus University showed that boys whose mothers had been exposed to PCBs grew up wanting to play with dolls and tea sets rather than with traditionally male toys*."

- For those who think that tiny amounts won't cause harm….

  May 22, 2007: "Estrogen threatens minnow manhood by Marin Mittelstaedt, "Environmental Reporter" It states, "*Exposing fish to tiny does of the active ingredient in the pill (synthetic estrogen), amounts little more than a whiff of estrogen, started turning male fish into females. Instead of sperm, they started developing eggs. Instead of looking like males, they became indistinguishable from females. Within a year of exposure, the minnow population began to crash. Within a few years, the fish, which at one time teemed in the lake, had practically vanished*." The amount of estrogen used was the same amount found in sewage treatment plants in Canada.

- Finally, Nov. 21, 2008: "SOS: California's Native Fish Crisis, Prepared by Cal Trout and based on report by Dr. Peter B. Moyle, Dr. Joshua A. Israel, and Sabra E. Purdy. The introduction states: "*As detailed in the pages that follow, what's been suspected for years we now know for certain---California's native ssalmon, steelhead and trout are in unprecedented decline and teetering towards the brink of extinction. The collision of climate change with decades of water mismanagement have brought us to where we are today…If present trends continue, 65% of our native salmonid species will be extinct within 50-100 years, with some species—such as coho, chum, pink salmon and summer steelhead—disappearing much sooner*." We include the pages describing the status of the three listed salmonid species listed for the Russian River: California Coast Coho Salmon and Chinook Salmon and Steelhead.

Title 22 and Section 7 Consultation (low flows)…

In general, we are very concerned about the reliance on Title 22 for asserting that water quality objectives will be met. There appears to be an underlying assumption that "incidental runoff" will not end up in our rivers and streams although no set back limits are required and few means of assurance are defined. In fact, it is totally unclear what amount of runoff is under consideration here. Under most circumstances, we find Title 22 very limited for meeting human health needs and totally inadequate for addressing wildlife and aquatic life concerns. It focuses mostly on acute diseases and does little for the rest.

There seems to be a logical disconnect between allowing "incidental runoff" and guaranteeing that runoff won't end up in surface water. We totally support Howard Wiltshire's comments in this regard. We fail to see how this policy is protective (other than through assertion) of all beneficial uses, when in fact, the waterways in proximity to the areas of use are already extremely degraded and are likely to become more so. This policy simply does not demonstrate how those uses will be protected.

So we wonder how possible cumulative "incidental runoff" incidents would fare in streams that have minimal flows? If you add this to the prospect of global warming, it appears we can have a serious problem, even if the "accidents" are small in scale. Many of the studies noted above mentioned that with endocrine disruptors, it doesn't take much to cause toxicity and the conventional wisdom that the "dose makes the poison" does not apply here. Furthermore, as Howard states, "*Little is known of the complex processes of transport and fate of most pollutants in treated wastewater*." I would add that even less is known about what pollutants are picked up by the runoff on its way to wherever it goes.

But wait, this is not all. The Sonoma County Water Agency recently released their 3000 page EIR for their long-range water supply project (available at their website). We have not had the time to examine it yet, but we ask that whoever responds to these comments examine the interrelationship between this new policy, the Biological Opinion, and the new Water Supply EIR. The Russian River will soon be subjected to numerous major policy and/or management changes and no one appears to be looking at how they interact with one another.

Anti-degradation Policy….

Howard Wiltshire clearly pointed out the weaknesses of the Anti-Degradation portions of this policy, which we strongly support. (Copy of his comments attached)

I recently received a copy of the Environmental Law Foundations over 40 pages of comments on the proposed Revision of the State's Antidegradation Implementation Guidelines dated Dec. 17, 2008, and written on behalf of 25 environmental and other groups. The commentary challenges the decision process of Regional Boards on "best professional judgment" in the absence of standards. It questions the absence of objective standards on which to base

decision-making. Such limitations have serious implications for the basic assumptions in the proposed Basin Plan Amendment.

It also comments on the fact that "The Guidance Improperly Ignores Cumulative Impacts", a concern we have already raised. Another section deals with, "The Guidance Improperly Allows for a Sliding Water Quality Baseline". In fact, the Laguna de Santa Rosa and its tributaries are one of the most impaired water bodies in the North Coast and subject to all kinds of nutrient and other pollution, partially a result of irrigation practices in the Rohnert Park area. We are not clear on what attempts have been made to control runoff in that area, although the invasive specie Ludwegia is totally blocking the stream channel. Attempts to remove and control the invasive were partially successful for a brief time. When the removal project ran out of funds (after about $2 million was spent), the problem came back full force and perhaps worse than what it had been before. (see pictures; also see attached Final Report on the Ludwigia Control Project by Laguna Foundations).

Throughout our comments we have referred to Antidegradation Policy frequently. We were very impressed by the ELF comments, which included reference to the Laguna and North Coast Regional Board, and we include some of them here.

"*The State's guidance for implementation of the Anti-degradation policy is flawed in numerous, important ways. The state guidance improperly funnels implementation through a process which is discretionary and devoid of enforceable standards, ignores cumulative impacts, and improperly injects the concept of 'significant degradation' into the anti-degradation policy*."

"*EPA mandates that a state's determination of whether or not degradation could occur "include the cumulative impacts of all previous and proposed actions and reasonably foreseeable actions which would lower water quality below the established baseline*." (page 7)

"*Clearly, participation only at the time of adopting the general permit is insufficient given that the public (and the state for that matter as noted above) cannot be aware of the nature and location of specific discharges that will be covered under the permit. The public participation that takes place when adopting the permit, therefore, cannot be meaningful." In a footnote here, it states, "It should be noted that such general permit schemes are not only inconsistent with the state's antidegradation policy, they are also inconsistent with the Clean Water Act's public participation requirements*."

Guidance fails to implement Antidegratdation Policy with regard to effluent dominated waters. (pg. 11) "*Finally, another deficiency in the state's implementation guidance is that it fails to address how the state's antidegradation policy should be implemented in the context of ephemeral and intermittent streams and the creation of effluent dominated waters through the discharge of wastewater into such streams. This is a major oversight given that a large proportion of the state's waters are intermittent or ephemeral." The issue of changing a stream's flow from ephemeral to perennial by*

adding reclaimed wastewater can be detrimental to species that rely on the ephemeral nature of the stream."

The Final Ludwigia Control Project Report states (pg 4):
The main Laguna channel is fed by many tributaries. "*Although most of the tributaries contain water year round, only one, Copeland Creek, is naturally perennial. The others are fed by urban and agricultural runoff during the dry season*." Gossage Creek is perennial but not naturally so. Bellvue Wilfred channel is fed by urban and agricultural runoff in the dry season. The waters of these creeks stand virtually stagnant in the summer.

For instance many amphibian species rely on the variability of stream flow. (Is this true for Tiger Salamander?) Ephemeral streams are their natural habitat (ie red legged frogs) Aggressive bull frogs like perennial streams. "*Some crustaceans too are particularly adapted to persisting in or colonizing ephemeral waters, including tadpole shrimp, clam shrimp, fairy shrimp, see shrimp, waterfleas, and copepods. Eggs of these crustaceans can lay dormant in the bottom of ephemeral waters for years until they sense favorable conditions for hatching. The alteration of the flow regimes on which these species depend displaces them in favor of other species better adapted to more constant flows*." The authors go on to reference numerous resources on this issue.

It is critical to identify how "incidental runoff" and "low threat discharges" can affect the perennial nature of the nearby streams. It is our believe that for years runoff from Santa Rosa's agricultural irrigation program created these conditions in many areas of the Laguna and have thereby affected habitat in that area.

Where creatures and plant life have gotten used to higher flows, how do pollutants remaining in the wastewater affect the ecosystem when wastewater is added to flows that are much lower due to SCWA management for threatened fish species? Where there is limited dilution capability the threat to aquatic life can be much more severe and the antidegradation requirement that existing uses maintain current water quality and protect beneficial uses would go unmet.

ELF document discusses Laguna on pages 18 to 21
They quote from two letters by Cat concerning the extreme problems from nutrients. They mention the Ludwigia problem. They then quote from the SR Permit issued that allows further degradation. (pg. 19) Comments then go on to state, "*…the Regional Board failed to properly implement the state's antidegradation policy—the Board justified this degradation only in relation to Resolution 68-16. Absent from the Board's discussion is any evidence of their analysis under 40 C.F.R. Sec. 131.12. Laguna de Santa Rosa, though, is a water of the United States….The federal antidegradation policy, therefore, clearly applies….So where is the Board's analysis under 40 C.F.R. Sec. 131.127. For instance, where is the recognition that the Laguna is a Tier 1 water body with respect to many of the impairing pollutants in the discharge.? In this connection, the Board admitted that it was allowing degradation, setting the limit for*

nitrogen at 10 mg/l-the drinking water standard-without any relation to the level of nitrogen already impairing the Laguna. Under the federal components of the state's antidegradation policy, such degrading levels of nitrogen would be prohibited. But nowhere is there any recognition of this requirement."

"*The Board should have looked at alternatives to treatment levels and discharge amounts. They failed to demonstrate that the degradation is necessary to accommodate important economic or social development. The comments go on to state that "…..proper implementation would have resulted in substantial modifications to the permit with increased requirements on the discharger*."

In regards to BMPs being used to meet Antidegradation guidelines and water quality objectives, yet they need to be defined. They need to explain how BMPs will allow them to meet water quality objectives.

Pg. 23 gives a case study whereby polluted streams were used for the water quality baseline. It states, "*The requirement for an antidegradation analysis, however, "does not depend upon identification of any discernible impact on beneficial uses."… Rather, what matters is whether a discharge will degrade water quality in relation to the baseline*." (describes necessary findings at bottom of pg. 23)

Footnote 22 on page 25 details the North Coast Board's failure in 2006 throughout 10 permits to conduct an antidegradation analysis and merely stated that the permit was consistent with the State's Antidegradation policy.

General Industrial Storm Water Permit/State Board (Pg. 25)
In reference to the City of Fortuna's permit it states, "…*the use of boilerplate language in the findings and the fact sheets of permits is rampant and indicates the failure by the regional boards to give each permitting decision the particularized attention that decision deserves*." They quoted from the permit, "*This Order may allow some degradation of the quality of waters of the state by virtue of the fact that it permits the discharge of waste containing suspended solids and elevated temperature above ambient conditions into a waterway containing suspended solids and temperature.*" They then indicate that the City of Santa Rosa's language is similar and quote, "*This Order may allow some degradation of the quality of waters of the state by virtue of the fact that it permits the discharge of waste exerting a biochemical oxygen demand, containing suspended solids, biostimulatory substances and elevated temperature above ambient conditions into a waterway impaired for dissolved oxygen, sediment, nitrogen, phosphorus, and temperature*." When ELF provided comments, RB1 changed the language of the findings to state that there would be no degradation.

I learned from these comments that what is important for the antidegradation analysis is not the condition of the beneficial uses, but the condition of water quality that is of utmost importance. This Amendment only refers to meeting current standards which, as we have pointed out, are inadequate in many ways.

Comments on salts and nutrients….

Bill Jenning's comments are focused mainly on the salt and nutrient segment of the State Water Recycling Policy. Certainly the issue with nutrients is especially pertinent to our area. Relatively little attention seems to have been paid to the salt issue, but many farmers won't use the wastewater for irrigation because of salt buildup in the soils. What are the long term impact of salt build up in soils? As mentioned earlier, we believe the Amendment also gives too little attention to the potential cumulative impacts of nutrients in "low threat" discharges.

You can see that he independently addresses many of the issues we have been concerned about. He also highlights concern about the fate of non storm water discharges on groundwater as well as the seepage of salts into the groundwater.

He asks what progress has been made by storm water program in cutting pollutants? How can safety of this program be demonstrated, especially in summer when stream flows are greatly diminished? Also, biggest problem with storm water is that rainwater carries street and lawn pollutants with it to streams. What would prevent this from happening with non storm water runoff? In other words, you have not only wastewater running off, but all the toxins it carries with it.

Costs of delivery often makes wastewater reuse infeasible. How would cost of delivery of Santa Rosa's wastewater, for example, compare to cost of potable supplies? Wouldn't fixing leaky sewer pipes offset the need for summer irrigation?

Chloroform: Title 22 limit for drinking water: 80 ug/l (see BJ's #6 and quote). Title 22 not protective of public health on chloroform.

Expresses concern about discharges that don't totally evapotranspirate, and end up in the groundwater. Site-specific impacts, including groundwater impacts, need to be defined and impacts mitigated. Entirely possible that Anti-Degradation Policy will be violated.

Regarding nutrient removal: (page 4) "Failure to provide nutrient removal at the wastewater treatment plant would not be providing BPTC and would not comply with the Antidegradation Policy." He said that (p. 5) nutrient removal is common in CA although phosphorus removal less common. Removal would make ground water assessment unnecessary.

Equivalent to allowing groundwater serve as a mixing zone.

Cost analysis of providing higher treatment should include cost analysis of NOT providing higher treatment.

Salt does not break down and will accumulate in ground water basins, therefore discharge not sustainable without salt removal. RO removes salt, but usually considered too expensive, although used a lot by industry.

Issue of what gets tested. Did not require testing of non-priority pollutants (gives list on bottom of page 5)

Irrigation Runoff: (bottom of p. 6) Asks if tailwater return systems are required to prevent run off to drainages. Brings up issue of chemical use on golf courses, lawns, etc. (pesticides and fertilizers)

Key questions: is percolation into soils allowed? How determined? Protection of ground water a key issue if this is the case. (Reclamation landscape irrigation General Order not developed as yet.) No areas of fractured bedrock should be allowed to be irrigated.

#16: Makes case that complete Anti-Deg analysis is needed BEFORE project to protect ground water.

Concerns about Anti-biotic Resistant Pathogens……

Dr. Edo McGowan wrote extensive comments regarding the spread of anti-biotic resistant pathogens, which he alludes to as a ticking time bomb. We have not seen this issue discussed anywhere and we would like to see it addressed in this Basin Plan Amendment process. Here is a segment from some comments he wrote to us in an email. (We have his permission to quote him. Also, we have attached his comments on the State Recycled Water Policy but did not have time to incorporate them into this document.)

Chad Kinney, see below, discussed the accumulation of pharmaceuticals in soils that accompany recycled water. Some of these are macrolides---erythromycin being an example. Erythromycin will augment the resistance of pathogens to vancomycin, which until recently had been held as the drug of last resort for methicillin resistant Strep. aureus (MRSA). Of course, we are now aware that community associated MRSA (CA MRSA) is running ramped in the communities of the U.S. Also in this discussion, we should include the study conducted by the Water Environment Research Foundation (WERF), which is the research arm of the waste water industry. That study was also published in the peer reviewed scientific literature by Valerie Harwood, but the principal author of the WERF study was Joan B. Rose. Joan and I along with Amy Pruden (see below) were on a WERF/EPA scientific panel that looked at pathogens and antibiotic resistance in sewage byproducts. I have also run some recycled water meeting state protocols for irrigation of public places and found that that water in at least two instances (two different cities) carried multi-antibiotic resistant bacteria. This was water produced to the cookbook specifications of the state. Actually we looked at 6 different cities and all contained chlorine resistant bacteria (see Matt Wook Chang below).

If we take these papers together, the combined message might be as follows: Chang notes that virulence (the capacity to cause disease) is enhanced by chlorine. Kinney notes that certain antibiotics seem to accumulate in soils. Others have shown that erythromycin can cross react with vancomycin. Erythromycin is a bacteriostatic antibiotic. That means that it actually does not kill the pathogens----rather it arrests growth. It then relies on a robust immune response to come in and kill the pathogen. But there are some problems here----not everyone has a robust immune system. But, let's assume a robust immune system for a moment. The white blood cell that does the killing of bacteria and other pathogens, relies in part on internalizing the pathogen within a little sac and then injecting a chlorine-like substance---hypochlorite---into the sac. But as we have demonstrated, chlorine resistance is developing amongst pathogens. And as Chang has shown, the pathogens are strengthened in virulence by chlorine. Thus what happens with an immune compromised person being put on bacteriostatics? Why spread antibiotic resistant pathogens in back yard lawns via recycled water? …….

Now as to lawns. It is well established that pesticides can cause a metabolic machinery shift in bacteria that causes resistance to develop. The same can be said of many other constituents that are run through sewer plants. Thus hospitals and other facilities for the ill can and do contribute large amounts antibiotics, pharmaceuticals, and antibiotic resistant pathogens to the wastewater stream. This allows for the intermixing of pathogens that might otherwise never get together to exchange of genetic information. Sara Firl (see below) notes that sewer plants generate antibiotic resistance.

So, Brenda, back to your question----------if we have pharmaceuticals, pesticides, heavy metals in the soil (you might to see the lab tests on fertilizers which often contain heavy metals) from owner applied materials as well as recycled water applied sources, we are going to see the same metabolic machinery developed that confers resistance in the soil-dwelling organisms. Now, via recycled water, we bring in some serious pathogens from hospitals and their genetic information to be added to this pre-stressed soil; we are merely adding fuel to an existing fire.

Assume for a moment that the city that is producing this recycled water forces it upon a new housing tract---which under state law the city is at liberty to do. What of the back yard gardens and lawns? We know that certain plants can bioaccumulate heavy metals and other materials such as the endocrine disrupters (I cover this extensively in my comments to the State Board on their Recycled Water Policy). In addition to that, plant roots can take up pathogens and these remain hidden inside the plant tissues. That means that washing these crops or even bleach soaking at the sink will have no impact on these internalized pathogens. Some good papers in the literature discussing this so it is not some obscure point, but the Board's staff missed this.

Then, there is another issue---------nematodes are small worm-like plant pathogens that inhabit the soil. They feed mainly on bacteria and other small soil microorganisms. This then brings the antibiotic resistant bacteria into the gut flora of these little creatures. The genetic information is thus exchanged with the nematode gut flora (same for worms and this is transferred to birds when they eat the worms and then whose droppings are then spreading this resistance). Now these little worm-like-creatures bore into plants---this is what they do for a living----then you chomp on that fresh carrot from your garden. The genetic information is transferred to your gut flora and in a short time you have billions of copies of this genetic info inside you. The World Health Organization is very concerned about this route of transfer and now considers this a global crisis. To give you some idea

of this, that genetic info can remain within your gut for up to four years according to recent research papers. Because of the numbers within the gut flora are large----- trillions, there are opportunities to see numerous exchanges to higher grade pathogens. Thus you are running around with lots of ticking small time-bombs inside you.

Now, lets look at what this all means.
Joan B Rose, whom we mentioned above, looked at recycled water via a WERF study in 2004, noted that recycled water from sewer plants that were tested in Florida, Arizona, and California all contained pathogens. Giardia cysts were found in 84% of the final treated recycled water. Enteric viruses were found in 31% of the final product in 2/3 of these plants and Cryptosporidum were noted in 71% of the final product of all tested plants. One of the main points made by these authors was that the tests used by the water and wastewater industries did not protect public health. Yet it is these CDPH tests upon which the State and Regional Boards will rely. Thus pathogens and resistant pathogens do get through into the environment where niches can be established and these may act as lending libraries for passing these pathogens back to man----the backyard garden is an example.

Amy Pruden, et al, (2006) followed genetic information on antibiotic resistance through sewer plants into the open environment and thence into the drinking water supply. The genetic information (antibiotic resistant genes) are not inhibited by chlorine since theyare not alive, in the sense of a living cell. Also because of their small size, they slip through most of the current filtering systems utilized by recycled water or drinking water treatment systems. As to viruses, for example, the French government, took action to reduce the risk of viral contamination associated with sewage byproducts. It passed legislation (decree of 8 January 1998 related to the landing of sewage sludge on agricultural soils) requiring that microbiological testing be carried out for validation of stabilization processes. There is not much being done in this area for recycled water here in the U.S. This European approach differs from the U.S. system which is essentially a voluntary self-policing by the industry and has generally poor follow up by the regulatory bodies (see below discussion of EPA and the failures of that agency to effectively enforce the Clean Water Act). The virological testing method currently specified in the French system is based on the counting of enterovirus particles. Unlike the U.S, the French government passed a national health care coverage system where victims of sewage byproduct illness are covered.

What are the chances for inadvertent acquisition of resistance from environmental contamination such as through recycled water? Gerba and Rusin conducted research about the passage from finger to mouth of pathogens found on typical household objects. Others have documented spray irrigation drift as a mechanical vector for pathogen movement. Thus what of the dwellings and towns down wind from sprinkler irrigation with recycled water (is this incidental off-site movement that the State Board is pushing)? Surfaces impacted by drifting spray can harbor pathogens for considerable periods of time depending on the surface characteriastcs. In addition, drift is enhanced at night when many municipal programs use recycled water to irrigate neighborhood parks. These night operations find drift and survival of pathogens enhanced. Considering the proximity of residences adjacent to public parks, just across the street, the distances may not be sufficient to assure public health protection. In the arid portions of the country, and during the summer when night irrigation is underway, many windows are open. In a German study, the recommended setback was 300 meters (975 feet) between sprinklers and human settlements. This is hardly the case in most American

cities. Please remember that the German government, unlike the U.S. system, is the responsible party for health care. Further, there are concerns about contamination through wash-off from rains and irrigation return flows. Gerba and others have written extensively about the survival of pathogens and their viable infectivity once they are adsorbed onto sediments. While this work by Gerba related to marine sediments, similar conditions need to be evaluated for fresh water systems. Selvaratnam and Kunberger (2004--see below) looked at the off-site movement of antibiotic resistance into adjacent water bodies from sewage sludge applied fields. These authors suggest that surface runoff from the farmland is strongly correlated with higher incidence of resistant genes and pathogens found in the adjoining water bodies, in this case recreational water that is tributary to drinking water sources. This same process can happen with off-site movement of recycled water.

Anyone who lives in an agricultural area knows that tillage and wind cause large movements of soil and dust that are equal to that found for water erosion. After a time there will be build-up of pathogens in soils irrigated by recycled water. If these dry out, the genetic fragments and many of the more robust pathogens will remain. These can be lofted with dust and thus move down wind. This is critical for the spore-formers. Anthrax is a member of the bacillus group and these are spore forming bacteria. The British worked with anthrax during WW II on a small island off UK. They had to quarantine that island for 50 years. The USGS has written extensively on the movement of dust from Africa, across the Atlantic and carrying with it viable pathogens thus causing respiratory disease in the Caribbean where this dust falls out. The indicator organisms used for wastewater commonly include Escherichia coli and sometimes Salmonella. These are the organisms that are normally killed by low-level disinfection. They are vegetative bacteria that are highly susceptible to both chemical disinfection and heat disinfection. However, we are finding these and other pathogens coming through in recycled water. This raises the logical question of survival for the more robust organisms. The non-enveloped viruses are hard to kill (Harwood and Rose both note high percentages of viruses coming through in recycled water). Pathogens that require high-level disinfection are missed by sewage treatment processes. These are those pathogens that contaminate semicritical medical devices such as the scopes inserted into the lower bowel. No sewer treatment plant reaches high level-disinfection. These bacteria when released by sewage treatment or contained within sewage byproducts are thus able to colonize environmental niches, and animals, including humans, through ingestion. (Assume here your 18 month old toddler with the immature immune system of all such humans at that age, dropping the passifier and then picking it up again). Once ingested, the plasmids may be transferred to normal flora, and subsequently to pathogenic bacteria found in humans or animals, making later treatment with particular antibiotics ineffective. Also one must consider transfer of genetic information from these organisms to more robust organisms as highlighted by Sjolund et al. (2005) indicating that resistance in the normal flora, which may last up to four-years, might contribute to increased resistance in higher-grade pathogens through interspecies transfer. Sjolund et al go on to note that since populations of the normal biota are large, this affords the chance for multiple and different resistant variants to develop. This thus enhances the risk for spread to populations of pathogens. Furthermore, there is crossed resistance. For example, vancomycin resistance may be maintained by using macrolides. Walsh (2003) notes that resistance to antibiotics is not a matter of IF but one of WHEN.

Schentag, et al. (2003), as found in Walsh, followed surgical patients with the subsequent results. Pre-op nasal cultures found Staphylococcus aureus 100% antibiotic

susceptible (the antibiotics all worked). Pre-op prophylactic antibiotics were administered. Following surgery, cephalosporin was administered. Ninety percent of the patients went home at post-op day 2 without infectious complications. Nasal bacteria counts on these patients had dropped from 10/5th to 10/3rd, but were now a mix of sensitive, borderline, and resistant Staphylococcus sp. By comparison, prior to surgery, all of the patients Staphylococcus samples had been susceptible to antibiotics. For the patients remaining in the hospital and who were switched on post-op day 5 to a second generation cephalosporin (ceftazidine), showed bacterial counts up 1000-fold when assayed on post-op day 7 and most of these were methicillin resistant Staphylococcus aureus (MRSA). These patients were switched to a 2-week course of vancomycin. Cultures from those remaining in the hospital on day 21, revealed vancomycin resistant enterococcus (VRE) and candida. Vancomycin resistant enterococci infections can produce mortality rates of between 42 and 81%.

Note in the above, that these patients harbored NO resistant bacteria in their nasal cavities upon entry to the hospital. But what would be the result if there had been inadvertent acquisition of resistance from environmental contamination such as through r recycled water? This then brings into question the current paradigm on infection and its dose response to a certain load of a particular pathogen, i.e., ID and LD 50s. This will drastically impact the proposed risk analyses for recycled water. Lateral transfer of mobile genetic elements conferring resistance is not considered in this old paradigm. With the prodigious capacity for the gut bacteria to multiply, once the lateral transfer has taken place, very small original numbers---well below the old paradigms can be multiplied into impressive numbers (do the numbers for yourself. If a gut flora bacterium---just one---picks up antibiotic genetic information and multiplies every 20 minutes----extend that out for 24 hours and see what you get). Since viruses and phages are also involved, their capacity to multiply, which dwarfs that of bacteria, must also be included. Thus there is a need for a new paradigm; unfortunately, the regulatory community seems not to recognize this. When one considers the multiplication within sewer plants and also within their byproducts, disbursement into the environment, the transfer to background organisms, hence to man and his animals, then the remultiplication within commensals, the emerging picture is worrisome. Further, there are opportunities and interrelationships between microbes that can degrade antibiotics, eg. antibiotic resistant bacteria, and those that can degrade metals as well as pesticides and farm chemicals that are already found in agricultural soils. In many cases, the involved cellular machinery is the same or similar, i.e., a duality (see Schlüter and abstracts of others below). This duality may have some interesting synergistic survival advantages for the microbes, but bad-for-human-health effects when considering sewer sludge as applied to heavily farmed lands. The current standards controlling sewer plant operations and recycled water consider none of these issues. This paper therefore contends that this unconsidered avenue for the spread of antibiotic resistance and amplification of risk for a pandemic needs greater awareness within the medical and health care community. Perhaps this is an area worthy of further review by policy committees. Without the perspective of a broader analysis of this issue, future policy may be no more that the post hoc rationalization for a series of missed opportunities. It would seem reckless to proceed without a broader picture. Unfortunately, the principal regulatory body seems to be essentially oblivious to these concepts, yet it has been promoting the use of recycled water at the behest of the large municipalities and water agencies.

This is information the public never sees. Title 22 consists of regulations geared to address public health needs. In light of the above information, how will

public health be protected? While Santa Rosa's wastewater gets rid of a huge proportion of pathogens, there are still some remaining, and this issue is of critical importance for spreading this stuff around in many places it has never gone before.